R E P O R T R E S U M E S

ED 019 066 JC 680 141

DEMOGRAPHIC FACTORS ASSOCIATED WITH HIGHER EDUCATION IN DELAWARE AND ENROLLMENT PROJECTIONS FROM 1966 TO 1975.

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PUB DATE OCT 66

EDRS PRICE MF-$0.50 HC-$2.88 70P.

DESCRIPTORS- *HIGHER EDUCATION, *DEMOGRAPHY, POPULATION GROWTH, *POPULATION TRENDS, *EDUCATIONAL NEEDS, ENROLLMENT TRENDS, ENROLLMENT PROJECTIONS, DELAWARE,

DURING THE 20TH CENTURY, DELAWARE'S POPULATION GROWTH HAS PARALLELED THAT OF THE COUNTRY AS A WHOLE, ALTHOUGH THE GROWTH HAS NOT BEEN EVENLY DISTRIBUTED THROUGHOUT THE STATE. NEED FOR EXPANSION OF THE STATE'S HIGHER EDUCATION OPPORTUNITIES WAS INDICATED BY TWO FACTORS--(1) THE TREND IN THE BIRTH RATE, WHICH LED TO A PROJECTION OF A 1975 COLLEGE AGE POPULATION WHICH WOULD BE MORE THAN DOUBLE THAT OF 1960, AND (2) INCREASES IN THE PERCENT OF THE COLLEGE AGE GROUP ENTERING SOME FORM OF HIGHER EDUCATION. FROM 1952 TO 1966, HIGHER EDUCATION ENROLLMENTS ALMOST TRIPLED, REACHING 6,905 FULL-TIME EQUIVALENTS AND CAUSING A PROJECTION OF 13,711 FOR 1975-76. (WO)

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Demographic Factors Associated with Higher Education in Delaware and Enrollment Projections from 1966 to 1975

A REPORT PREPARED FOR THE DELAWARE HIGHER EDUCATION AID ADVISORY COMMISSION

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Newark, Delaware
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JC 680 141

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CHAPTER I

PURPOSE OF THE STUDY

Providing higher educational facilities for the mounting number of young people of college age poses, perhaps, one of the more serious problems in the immediate period ahead. In 1963 there were 4.5 million degree credit students in American colleges and universities. It has been estimated that by 1970 degree credit enrollment will have reached 7.7 million and by 1975 it will be 9.5 million.*

The phenomenal growth and enrollment is, in part, a result of the sharp rise in births which began during World War II and continued through to the 1950's. The increasing number of young people is not the only factor generating pressure on the capacity of colleges and universities. The proportion of young people who graduated from high school is higher than it has ever been. Like the high school diploma of years past, a college degree is rapidly coming to be regarded as a necessity for personal success. And as family incomes rise, more and more families find it financially feasible to send their children to college, or they are at least able to support themselves without the aid of their college-age children. As a result, the proportion of young people going to college--that is the ratio of college

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*Mushkin, Selma J. and Eugene P. McLoone, Public Spending for Higher Education 1965, (Chicago, Illinois: The Council of State Governments, 1965), p. 45.

enrollment to the total population of 18 to 21 year olds--rose from 16 percent in 1940 to 30 percent in 1950. By 1960 it exceeded 40 percent, and it is expected to exceed 50 percent by 1970.

This increased enrollment, and anticipated future enrollments, poses a mutual problem for public and private higher education; it is the need for vast expansion of facilities. Pressures of enrollment, advances in science and technology, and expanding research functions of higher education all necessitate additional space and equipment. It is within the context of trying to generate additional information which may be helpful in the solution of these problems that this research is being made. In general, the purpose is to investigate underlying demographic factors which are related to the population growth in order to provide data and analyses bearing on the future needs of Delaware for higher educational academic facilities.

A study of this type is particularly pertinent in Delaware, because during the decade of the 1950's it was the fifth fastest growing state in the United States. This growth has continued into the first half of the 1960 decade, and indications are that population will continue to increase at least into the immediate future. Paralleling the rapid increases in total population is a rapidly increasing number of young men and women of college age who are potential enrollees in colleges and universities.

Large additional expenditures in the State are in prospect for higher educational academic facilities. With needs which are imminent, relatively large amounts of money involved, and facilities to build which will have a long period of use, it is important to have basic demographic data relevant to future needs which can be available in advance to making commitments for construction.

In an effort to provide some of this information a two-part research design was employed. The first part involves a study of demographic factors which are related to the potential number of students who may attend institutions of higher learning in the State. This will include a forecast of full-time college and university undergraduate students enrolled in Delaware institutions of higher education to the year 1975. The second part of the research, which is reported in a separate study, is an examination of post high school plans for a sample of Delaware high school seniors; in this part of the study the major concern is with who goes to college, where they plan to attend, and an investigation of factors involved in the selection of a school.

The general scope and content of the present project may be outlined as follows:

1. An analysis of historic numeric growth of Delaware's total population and recent changes which have occurred in the population structure.

2. Sources of population change will be investigated. This provides information as to how much of the population growth in the State is due to natural increase (an excess of births over deaths) and how much is due to net migration. Particular emphasis is placed on the net migration patterns of college-age young people.

3. Projections of total population and a forecast of college-age population to the year 1975 will be made. This will provide information concerning the basic pool from which college and university students may be drawn.

4. The relationship between college-age population and students enrolled in the various institutions of higher learning in the State will be examined.

5. Projections will then be made of full-time undergraduate enrollments to the year 1975. These total enrollments will then be allocated to the various institutions of higher learning in the State.

This is an effort to provide the Higher Educational Aid Advisory Commission of Delaware with information and analyses of past population trends and forecasts for the future which have a bearing on the state's future needs for higher educational academic facilities.

CHAPTER II

POPULATION GROWTH IN DELAWARE

Historic Numeric Change.

Throughout the twentieth century Delaware has experienced a continuous population increase from a base of 184,735 in 1900 to 446,292 in 1960. This constitutes a 142 percent increase since the turn of the century, Table 1. Although the growth has been continuous, the rate of growth between decades has varied considerably. From 1900 to 1930 the rate of growth was rather slow, with the decade of the 1920's showing the least growth. Since 1930, however, after a long period of relatively gentle increase, Delaware's population has been growing more rapidly than that of the country as a whole. The 40 percent increase between 1950 and 1960, which was more than twice the rate of the total country, made Delaware the fifth fastest growing state in the Nation during that decade, Table 2.

When comparisons are made among the three counties within the State, it can readily be seen that the population growth has not been evenly distributed geographically, Table 3. The county of New Castle has also experienced continuous growth since the turn of the century. Within the span of 60 years, from 1900 to 1960, the population in this county has increased from approximately 110,000 to over 300,000 people. Again, the rates of growth fluctuated greatly from decade to decade, Table 4. The decade of

TABLE 1

POPULATION OF DELAWARE AND THE UNITED STATES
1900-1960

Year	Delaware	United States
1900	184,735	76,212,168
1910	202,322	92,228,531
1920	223,003	106,021,568
1930	238,380	123,202,660
1940	266,505	132,165,129
1950	318,085	151,325,798
1960	446,292	179,323,175

Source: U.S. Census of Population

TABLE 2

PERCENT POPULATION CHANGE FOR DELAWARE AND
THE UNITED STATES BY DECADES
1900-1960

Decade	Delaware	United States
1900-1910	9.5	21.1
1910-1920	10.2	15.0
1920-1930	6.9	16.2
1930-1940	11.8	7.3
1940-1950	19.4	14.5
1950-1960	40.3	18.5

Source: U.S. Census of Population

TABLE 3

POPULATION OF DELAWARE BY COUNTIES
1900-1960

Year	Kent	New Castle	Sussex	State
1900	32,762	109,697	42,276	184,735
1910	32,721	123,188	46,413	202,322
1920	31,023	148,239	43,741	223,003
1930	31,841	161,032	45,507	238,380
1940	34,441	179,562	52,502	266,505
1950	37,870	218,879	61,336	318,085
1960	65,651	307,446	73,195	446,292

Source: U.S. Census of Population

TABLE 4

PERCENT POPULATION CHANGE FOR DELAWARE BY COUNTIES FOR
THE DECADES BETWEEN 1900-1960

Decade	Kent	New Castle	Sussex	State
1900-1910	- 0.1	12.3	9.8	9.5
1910-1920	- 5.2	20.3	- 5.8	10.2
1920-1930	2.6	8.6	4.0	6.9
1930-1940	8.2	11.5	15.4	11.8
1940-1950	10.0	21.9	16.8	19.4
1950-1960	73.4	40.5	19.3	40.3

Source: U.S. Census of Population

least growth was from 1920 to 1930, while the 1950 decade had the greatest percentage increase of all the periods under consideration. The population increased by approximately two-fifths during this time period and closely parallels the growth for the whole State. During the past six decades the State and New Castle County have followed quite similar growth trends. The decade of greatest divergence was 1910 to 1920, at which time New Castle County grew at approximately twice the rate of the State. This was in large part due to the economic growth of the county in response to World War I. With this exception, as far as the rate of population growth is concerned, it can be seen that "as New Castle County goes so goes Delaware".

It must be kept in mind, however, when discussing population growth of New Castle County, that there are quite different growth patterns when comparisons are made between the City of Wilmington and the balance of the county. For example, by the year 1940 the city reached a peak population of 112,504 people, and for the next 20 years Wilmington registered rather major population losses. In contrast to the center city, the balance of New Castle County in recent years has undergone significant population increases. Since 1900, the population in New Castle County outside of Wilmington has increased by 178,430. This constitutes an increase of 538 percent. As a matter of fact, a very large part of Delaware's entire population growth in recent years has been in New Castle County outside of Wilmington. Of the 180,000 rise in the state's population between 1940 and 1960, about 145,000 was due to the growth in the Wilmington suburb. Between the enumeration periods of 1950 and 1960 this area sustained a dramatic 95 percent population increase.

During the first 50 years of the twentieth century Kent County exhibited very little population growth. The total increase from 1900 to 1950 was only 5,108 persons or an increase of 15.6 percent. The population actually decreased from 1900 to 1920, and then exhibited a gradual increase from 1920 to 1950. Kent County did not keep pace with population growth of the State over this period of time. This, in all likelihood, was due to the fact that this county was predominantly rural during this time and much of the migration was from rural areas to larger urban centers. As indicated by the 1960 data, however, Kent County was not destined to be a region of slight population change. With the reactivation of the Dover Air Force Base in 1951 and the concurrent expansion of industrial employment in Dover and its surrounding environs, Kent County increased its population from 37,870 persons in 1950 to 65,651 in 1960, representing an increase of 73.4 percent or 27,781 persons. This means that between 1950 and 1960 Kent County added five times as many persons as it had in the previous five decades. That Kent County was proportionately the fastest growing county in the State is shown by the fact that New Castle County had a population increase of 40.5 percent during the 1950's and Sussex County increased by 19.3 percent.

With the exception of 1910 to 1920, Sussex County has exhibited a steady population increase, going from 42,476 persons in 1900 to 73,195 persons in 1960 for an increase of 30,919 persons. Of this total population growth between 1900 and 1960, more than one-third occurred since 1950 and two-thirds of the growth occurred since 1940. While the greatest growth has been happening during the most recent decade, Sussex County's proportion of the

total Delaware population steadily decreased from one-fifth of the state's population in 1940 to one-sixth in 1960. This is due to more rapid growth in the upper two counties of the State, especially since 1950. When the growth rate of Sussex County is compared with the rest of the country, it can be seen that from 1900 to 1930 the population change by decade in Sussex was very much lower than that of the United States. From 1910 to 1920 there was even a population loss of 5.8 percent in the county. This was due, in large part, to the heavy outmigration of rural young people to the urban centers, particularly in response to World War I. On the other hand, from 1930 to 1940, while the United States was at its lowest ebb of growth during the present century, Sussex County registered a substantial population gain which was double the rate of the United States. During this period the severe economic recession which was occurring throughout the country caused many people to return to their previous rural residences. In the last two decades, however, Sussex County and the United States have closely paralleled each other in proportionate gains with Sussex County showing only a slightly higher percentage increase in both cases. Thus, it is notable that presently Sussex County exhibits a population growth rate which is nearly equal to the national rate of increase.

When the growth rates of Sussex County are compared with the state growth rates, it can be seen that no great discrepancies occurred during the first 50 years of the present century with the exception of the 1910 to 1920 period. During the 1950's however, the growth rate of the State was twice that of Sussex County. This suggests that the large scale effects of

urbanization (and suburbanization), along with the industrial growth and commercial expansion, have not been felt in Sussex County as extensively as in the rest of the State. Historically, this county has been the most rural with a fairly stable population growth rate. Because of its geographic location, it has been beyond the fringe of the large megalopolis which is being realized from Boston, Massachusetts, to Washington, D.C. All of this could well change in the near future, however, with the opening of the Chesapeake Bay Bridge Tunnel. This removed the last water barrier between the major markets of the East and the Norfolk-Richmond markets of the Southeast. The improved transportation facility could well reduce the relative isolation which Sussex County has experienced in the past.

In summary, with the exception of the 1950 decade, Delaware has experienced a relatively steady rate of population increase since the turn of the century. During the 1950's the State had one of the highest population growth rates in the country. This growth has not been evenly distributed among the three counties, however. New Castle County's growth has paralleled that of the State, with the City of Wilmington experiencing substantial population losses in recent decades, while the balance of the county has grown at rapid rates. Kent County had relatively slow rates of growth from 1900 to 1950. Between 1950 and 1960, in large part due to the reactivation of the Dover Air Force Base to house the military air transport service, this county grew faster than either New Castle or Sussex. Sussex County, which is much more rural in orientation than the other two counties, has experienced relatively gentle population increases since 1930.

Population Structure

Persons are born into a society, some of them later move away and perhaps are replaced by others moving in, and eventually all that remain die. These processes of fertility, migration, and mortality together determine not only the current size of the population of an area, but also its structure, or the distribution by sex and age. Conversely, to the degree that other factors remain unchanged, the population structure sets the future rates of fertility, migration, and mortality. In the previous discussion it was noted that recent population changes represented rather major departures from some of the earlier trends in Delaware. This was particularly true during the decade of 1950 to 1960. In view of the importance of population structure to an understanding of the needs of the State, particularly as it relates to higher education, the changes in the age and sex distribution which occurred during the 1950 decade will be examined.

From the data presented in Tables 5 and 6 it can be seen that the total population growth in the State was not randomly distributed with regard to age. For example, all of the age categories under 15 years showed not only substantial numeric increases but also proportionate increases from 1950 to 1960. At the beginning of the 1950 decade, approximately 82,000 or slightly more than one in four persons in the State was under 15 years of age. By 1960, however, this age category had increased to more than 143,000 or almost one in three persons in the State was less than 15 years of age. This rather dramatic increase in the number of young people was largely a result of the "baby boom" after World War II which continued well into the 1950 decade. Some of these young people have already entered college,

TABLE 5

AGE BY SEX FOR DELAWARE, 1950

Years of Age	Total		Sex			
			Male		Female	
	#	%	#	%	#	%
Under 5	33,185	10.5	16,665	10.8	16,520	10.3
5 - 9	27,190	8.6	13,970	9.0	13,220	8.2
10 - 14	21,765	6.9	11,355	7.4	10,410	6.4
15 - 19	21,240	6.7	10,510	6.8	10,730	6.6
20 - 24	23,280	7.4	11,110	7.2	12,170	7.5
25 - 29	27,090	8.6	12,595	8.2	14,495	9.0
30 - 34	26,165	8.3	12,440	8.1	13,725	8.5
35 - 39	24,175	7.6	11,995	7.8	12,180	7.5
40 - 44	21,660	6.9	10,565	6.8	11,095	6.9
45 - 49	18,500	5.8	9,085	5.9	9,415	5.8
50 - 54	18,170	5.8	8,970	5.8	9,200	5.7
55 - 59	14,985	4.7	7,335	4.8	7,650	4.7
60 - 64	12,515	4.0	6,080	3.9	6,435	4.0
65 and over	25,815	8.2	11,560	7.5	14,255	8.8
Total	315,735	100.0	154,235	100.0	161,500	100.0
Median age		30.8		30.4		31.2

Percent may not total 100 due to rounding.

TABLE 6

AGE BY SEX FOR DELAWARE, 1960

Years of Age	Total		Sex			
			Male		Female	
	#	%	#	%	#	%
Under 5	55,411	12.5	28,247	12.8	27,164	12.1
5 - 9	47,788	10.7	24,349	11.1	23,439	10.4
10 - 14	40,341	9.0	20,612	9.3	19,729	8.8
15 - 19	29,979	6.7	14,672	6.6	15,307	6.8
20 - 24	27,081	6.1	13,371	6.0	13,710	6.1
25 - 29	30,008	6.7	15,090	6.8	14,918	6.6
30 - 34	32,658	7.3	16,026	7.2	16,632	7.4
35 - 39	33,232	7.4	16,380	7.4	16,852	7.5
40 - 44	31,045	7.0	15,507	7.0	15,538	6.9
45 - 49	26,451	5.9	13,049	5.9	13,402	5.9
50 - 54	22,763	5.1	11,338	5.1	11,425	5.1
55 - 59	19,314	4.3	9,645	4.4	9,669	4.3
60 - 64	15,730	3.5	7,447	3.4	8,283	3.7
65 and over	34,491	7.7	15,341	6.9	19,150	8.5
Total	446,292	100.0	221,074	100.0	225,218	100.0
Median age		28.8		28.1		29.4

Percents may not total 100 due to rounding.

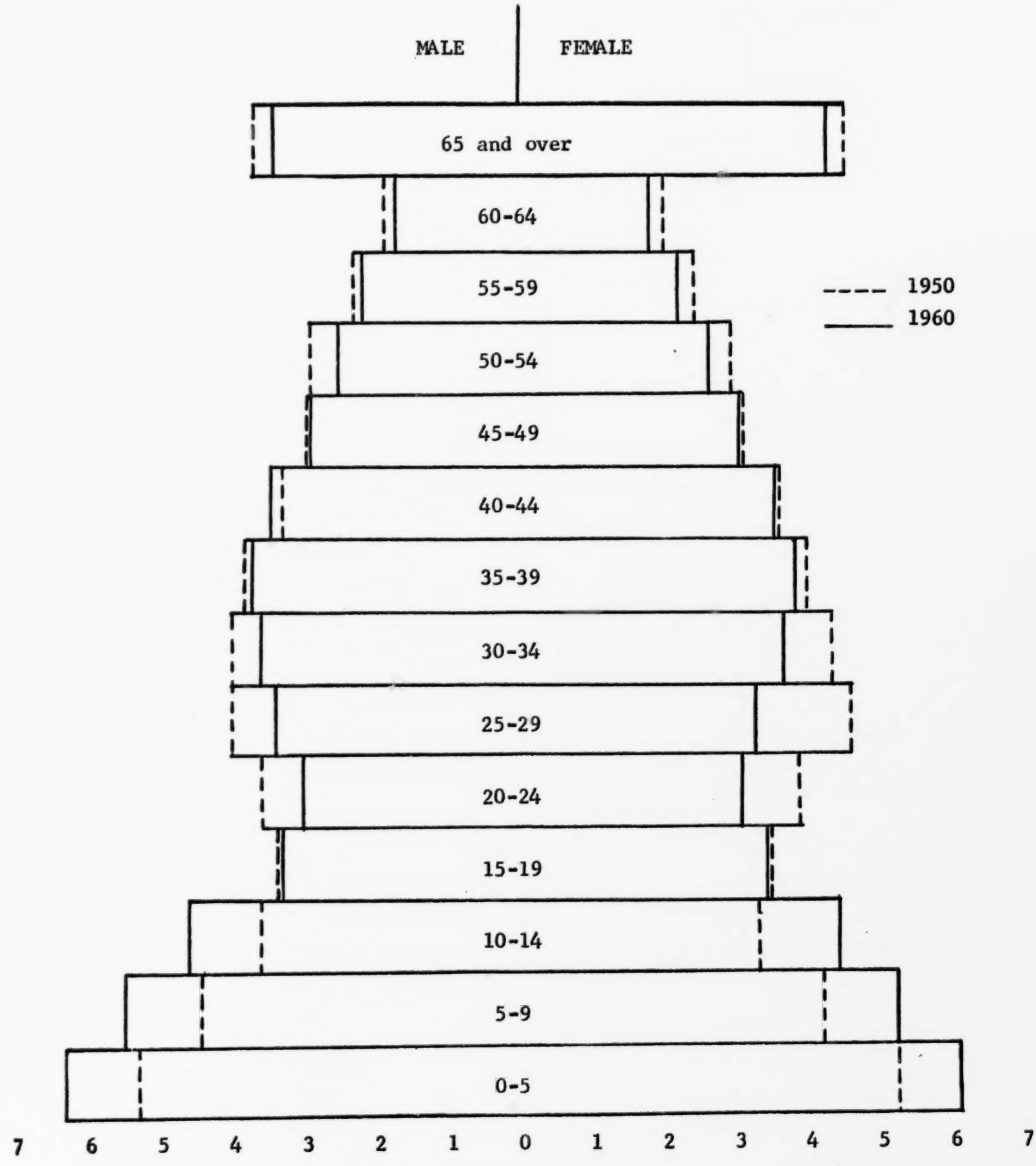
but most of them will be entering between now and 1975. One can get another indication of the youthfulness of Delaware population by examining the median age. For example, in 1950 half the population in the State was 30.8 years of age or younger; whereas, by 1960 half the population was 28.8 years of age or younger. It is anticipated that this "younging" of the population will continue.

In order to see the changes graphically, the 1960 population pyramid is superimposed on the pyramid for 1950, Figure 1. The pertinence of the contrast can be illustrated with respect to the fertility trends the two pyramids indicate. In the 1950 graph the bars which represent those aged 10 to 19 are comparatively short, reflecting the low fertility during the depression of the 1930's. Ten years later this cohort was aged 20 to 29 years, and in the 1960 graph the bars for this age group are relatively short. The three lowest bars in the 1960 graph, however, are much longer, for they indicate the "baby boom" during and immediately after World War II. This is intriguing to note because the small cohorts born during the 1930's are now in their 20's; and this means that the age group out of which the labor force and parents are mainly recruited are, in proportion to the total population, relatively small. From 1965 on the much larger cohorts born in the years immediately after World War II will reach the age of 20, and this increased proportion of young people has and will continue to have dramatic effects upon many aspects of American life.

If one wanted to know what the population pyramid for 1970 would look like, a preliminary idea could be obtained by shifting the bars up another 10 years. The large cohorts born during the 1950 decade would then be

Figure 1

PERCENTAGE DISTRIBUTION OF THE POPULATION
OF DELAWARE BY AGE AND SEX, 1950 AND 1960



10 to 19 years of age. This suggests that the heavy expansion pressures which have been placed on institutions of higher learning is likely to continue at least into the foreseeable future. A more detailed analysis of the projected college-age population, at least up to 1975, will be presented in a later chapter.

Obviously, the population structure of a particular area does not remain static. It is affected by both the natural increase of that population and the migration patterns of people into or out of the area. An investigation of these sources of population change constitutes the purpose of the next section of this analysis.

Components of Population Change

In the previous discussions attention was centered on population change both in terms of growth and population structure. The purpose of this part of the chapter is to examine those factors which have contributed to this change. There are two components of population change--natural increase and net migration. Natural increase is the part of population change which is due to the total number of births minus the total number of deaths. Migration, on the other hand, is the flow of people between areas and consists of both movements into and out of a designated area. Net migration is the difference between inmigration and outmigration. A net migration loss does not mean that people have only moved out of an area, but only that persons leaving outnumbered those entering.

It is often necessary to obtain the net migration rate indirectly. The method used in this analysis was to subtract the natural increase of an area

(in this instance the State of Delaware) from the total population increase which has occurred during a specified time period (1940 to 1950 and 1950 to 1960) and designate the remainder as net migration.

It is well to examine the components of population change together because they often interact with each other. When there is increased economic activity which attracts young people into an area, this not only affects the net migration rates but also the rates of natural increase. These young inmigrants tend to be in their most fertile years; therefore, the birth rates go up and the death rates go down, thus causing a substantial natural increase. Therefore, for purposes of this analysis both net migration and natural increase will be examined for the State as a whole. The components of change were analyzed for both the white and nonwhite population for the 1940 and 1950 decades.

For the State of Delaware, 51,580 people were added to its population between 1940 and 1950. Of this increase, by far the greatest proportion was the 43,349 white people which were added as compared to 8,231 nonwhites. During this time period almost 22,000 more people moved into Delaware than moved out, Table 7. This means that almost three-fifths of the population growth (29,599 people) which occurred in the State during the 1940's was due to natural increase. An interesting contrast is that proportionately more whites were added as a result of natural increase than were Negroes.

Between 1950 and 1960 the population was increased by 128,207 people, about one-half of which was due to net migration. From this it can be seen that for the State as a whole, not only was natural increase an important source of population growth, but the heavy influx of new migrants was also

TABLE 7

ESTIMATED NET MIGRATION AND NATURAL INCREASE BY COLOR IN THE STATE OF DELAWARE FOR THE DECADES 1940-1950 AND 1950-1960

Components of Change	1940-1950					
	Total		White		Nonwhite	
	Number	Percent	Number	Percent	Number	Percent
Net Migration	21,981	42.6	17,533	40.4	4,448	54.0
Natural Increase	29,599	57.4	28,816	59.6	3,783	46.0
Total Change	51,580	100.0	46,349	100.0	8,231	100.0

Components of Change	1950-1960					
	Total		White		Nonwhite	
	Number	Percent	Number	Percent	Number	Percent
Net Migration	63,212	49.3	56,789	51.4	6,423	36.2
Natural Increase	64,995	50.7	53,660	48.6	11,335	63.8
Total Change	128,207	100.0	110,449	100.0	17,758	100.0

Source: U.S. Census of Population and National Office of Vital Statistics.

substantial. When comparisons are made between the white and nonwhite population it can be seen that the trend which prevailed in the 1940's changed. At that time less than one-half of the nonwhite population growth was due to natural increase; whereas between 1950 and 1960 about two-thirds of the increase in the Negro population was due to the fact that more babies were being born than there were people dying. In contrast, 56,789 more white people moved into the State than moved out during the 1950's, and this constituted slightly more than one-half of the total population increase among the white people. From this it can be seen that for over the past 20 years net migration has become increasingly important as a source of population growth. This is especially true within the white sector of the population.

Of the components of population change, it is migration that is most subject to radical change in relatively short spans of time. It is difficult to state precisely why people migrate when movers are thought of as individuals. Yet one can generalize, with some degree of confidence, on the motivation for migration when the migrants are analyzed in terms of demographic groupings. For example, it is generally assumed that for the young adult, migration is related to availability of economic opportunity. There is little doubt that much of the industry which is located in the State is high growth industry which is continually expanding. This, therefore, serves to attract young people into the State. This is particularly true of the petrochemical complex located in New Castle County. On the other hand, Sussex County has shown relatively slow industrial growth, and

rather than attracting young adults the county often loses its young people to areas which offer greater economic opportunity.

In order to more precisely understand the effects of net migration on the growth of Delaware's population, migration patterns by age, sex, and color cohorts will be examined for the 1950 decade.

When the total migrant category is examined by age it can be seen that almost 1 in 20 (2,978) of the migrants was under the age of 10, while approximately 1 in 6 (10,713) was between the ages of 10 and 19, Tables 8 and 9. Approximately one-half of all the migrants were between the ages of 20 and 40, with slightly fewer than one-fourth in their 20's, and slightly more than one-fourth in their 30's. After the age of 40 the proportion of migrants tends to go down substantially. About 3 out of 10 migrants were 40 years of age or older. These data tend to support the suggestion made earlier that there was a selectivity of the young adult in the migration process. This means that in future growth not only will net migration add to the total population, but there will also be a significant and substantial natural increase growing out of the fact that heavy proportions of young adults have migrated into the State. The shape of the population structure in Delaware is one of rather rapid growth.

When comparisons are made between the white and nonwhite migrant patterns, it can be seen that almost nine-tenths (56,789 persons) of the total growth due to net migration in the 1950 decade was due to white people moving into the State. When the net migration patterns between the white and nonwhite population are compared on age, some rather significant

TABLE 8

ESTIMATED NET MIGRATION BY AGE, SEX, AND COLOR FOR THE STATE OF DELAWARE, 1950-1960

Age	Sex and Color						
	White		Nonwhite		Total		
	Male	Female	Male	Female	White	Nonwhite	Total
Under 9	798	1,091	579	510	1,889	1,089	2,978
10 - 14	3,162	3,188	338	351	6,350	689	7,039
15 - 19	1,028	2,157	165	324	3,185	489	3,674
20 - 24	1,826	2,934	407	457	4,760	864	5,624
25 - 29	4,322	3,967	399	363	8,289	762	9,051
30 - 34	4,949	3,981	400	297	8,930	697	9,627
35 - 39	3,823	3,109	175	157	6,932	332	7,264
40 - 49	3,855	2,780	333	215	6,635	548	7,183
50 - 64	2,770	1,681	175	12	4,451	187	4,638
65 and over	3,004	2,364	597	169	5,368	766	6,134
Total	29,537	27,252	3,568	2,855	56,789	6,423	63,212

TABLE 9

PERCENT DISTRIBUTION OF ESTIMATED NET MIGRATION BY AGE, SEX, AND COLOR FOR THE STATE OF DELAWARE, 1950-1960

	Sex and Color						
	White		Nonwhite		Total		
Age	Male (N=29537)	Female (N=27252)	Male (N=3568)	Female (N=2855)	White (N=56789)	Nonwhite (N=6423)	Total (N=63212)
Under 9	2.7	4.0	16.2	17.9	3.3	16.9	4.7
10 - 14	10.7	11.7	9.5	12.3	11.2	10.7	11.1
15 - 19	3.5	7.9	4.6	11.3	5.6	7.6	5.8
20 - 24	6.2	10.8	11.4	16.0	8.4	13.5	8.9
25 - 29	14.6	14.5	11.2	12.7	14.6	11.9	14.3
30 - 34	16.7	14.6	11.2	10.4	15.7	10.8	15.2
35 - 39	12.9	11.4	4.9	5.5	12.2	5.2	11.5
40 - 49	13.1	10.2	9.3	7.5	11.7	8.5	11.4
50 - 64	9.4	6.2	4.9	0.4	7.8	2.9	7.3
65 and over	10.2	8.7	16.7	5.9	9.4	11.9	9.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent of Grand Total	46.7	43.1	5.6	4.5	89.8	10.2	

differences can be discerned. For example, a substantially larger proportion of Negro migrants (16.9 percent) was under 10 years of age than was true for the white migrants (3.3 percent). The same was true for those persons between the ages of 20 and 24. After the age of 25 there tended to be slightly larger proportions of white persons in each of the age cohorts than was true for nonwhite population. This suggests that the Negro tends to be younger when he moves into the State than the white and that he brings with him a large proportion of small children.

When comparisons are made between males and females within each of the color categories, it can be seen that a substantially larger proportion of white women (18.7 percent) between the ages of 15 and 24 migrated into the State than was true for white men (9.7 percent). After the age of 30, however, slightly larger proportions of men are found in the migrant categories than is true for the female. The same pattern tended to also prevail for the nonwhite population, with the exception that there was less discrepancy in the older age categories. This age distribution of migrants has also been found in other studies. The rationale for the findings is that females tend to leave home younger and in greater proportions than do males. This is due in large part to the constraints which the family places on the girl, which tend to be much greater when she is at home than is true for the male. Therefore, in order for her to obtain the freedom that she would like, she leaves home at an earlier age.

These data indicate, as was suggested earlier, that migration into the State has been selective of the young adult. It may well be assumed that the motivation for this migration is due to economic opportunity which

exists here. This,serves to attract people into the State and will in all likelihood continue to attract them. As people have migrated into Delaware to take advantage of economic opportunities, they have also brought with them their children. With the young migrants added to the youthful population which is already here the impact on the State of Delaware will be substantial. For example, almost 13,700 persons under the age of 20 migrated into the State between 1950 and 1960. These people contribute to the pool out of which college and university students will eventually be drawn.

The purpose of the next chapter, then, is to project the total population to the year 1975 in such a way that both natural increase and net migration will be taken into consideration. From these projections, estimates of the college-age population will also be developed.

CHAPTER III

FUTURE POPULATION IN DELAWARE

In this chapter future population changes and trends are projected by age and color. The total population projections are presented for five-year intervals from the base year 1960 to 1975. The college-age population (18 to 21) is projected for single years from 1960 to the year 1975. The reason for so much detail in the treatment of the college-age population is that other researchers* have found a relatively stable relationship between full-time enrollments in a given year and the size of college-age population. The projected college-age population will, therefore, be used as the base from which future college and university enrollments in Delaware will be projected.

Estimating population growth and change is, at best, an uncertain enterprise in that so many factors are highly variable and can greatly affect

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*Ronald B. Thompson, Enrollment Projections for Higher Education, 1961-1978, A service of the Enrollment Studies Committee of the American Association of Collegiate Registrars and Admission Officers, September 1961, 36 pp.

*Kenneth E. Anderson, Forecasting University of Kansas Enrollments 1965-66 to 1974-75 and to the year 2000, University of Kansas, December 1964, 13 pp.

*Enrollment in New York State Institutions of Higher Education 1960-1978, The University of the State of New York, State Education Department Office of Planning in Higher Education, January 1965, 11 pp.

the outcome. No forecaster can predict with certainty global, national, or local social and economic conditions for the future. Economic recession or depression, social upheaval or change, and wars may occur without warning, frustrating any attempts to project accurately population characteristics. For example, one cannot precisely predict the effect which the Vietnam conflict or the present "heat-up" in the economy will have on future population growth. In spite of these difficulties it is imperative for both public and private agencies to have reasonable estimates of future levels of population in order to provide adequately for future needs. This is particularly true for educational institutions. To accomplish this purpose of reasonable population estimates, a projection of past trends into the future offers the most practical means of determining what levels of population growth can be expected without major changes in those factors which determine the size of population, such as fertility, mortality, migration, and a host of social, economic, political, cultural, religious, and psychological variables which influence those factors. There are several analytical procedures which take into account the most important factors influencing population growth or decline and which are considered reasonably accurate.

The analytical method utilized here to estimate the future population of the State is the component method or the U.S. Census Bureau's "Method II". It is the most accurate, and hence the most complex, method available. The results of the component method of population projection should be reasonably accurate to 1970 but may lose some reliability in the 1975 projection. A detailed statement of assumptions which were made in order to project the population may be found in the appendix. In developing the assumptions

concerning anticipated migration rates, heavy reliance was placed upon the statewide economic studies prepared by Mr. Robert W. Cook of the Division of Urban Affairs of the University of Delaware for the Delaware State Planning Office.

The components in the present method of projection are birth, death, and migration. These are the factors which cause a population in an area to increase or decline. When making population projections, one needs to take into account the fact that these components differ among various age, sex, and color categories. For the present study, therefore, age-sex-color specific ratios were computed for each of the components of change. Also, these rates vary among various geographic sectors in the State. For this reason separate rates for each component were computed for Wilmington, the balance of New Castle County, Kent County, and Sussex County. All this means that separate birth, death, and net migration rates were computed for each of the major geographic sectors in the State in such a manner that would take into consideration the age, sex, and color composition of the population within each of the designated geographic areas. This was done in an effort to bring greater precision to the projection process.

Total Population Estimates for Delaware.

Under the assumptions made, it is estimated that Delaware's population will increase from 446,292 in 1960 to almost 590,000 in 1970 and reach a total population of slightly less than 700,000 by 1975, Table 10. The U.S. Bureau of the Census estimated the population of Delaware in July of

TABLE 10

POPULATION ESTIMATES FOR DELAWARE BY AGE AND COLOR, 1960-1975

Age	Total Population 1960*	1965	1970	1975
0 - 4	55,411	63,447	79,516	100,753
5 - 14	88,129	106,345	127,405	154,428
15 - 19	29,979	41,365	53,714	63,409
20 - 44	154,024	161,453	181,402	211,851
45 - 64	84,258	94,263	111,529	128,659
65 and over	34,491	33,760	36,244	40,441
Total	446,292	500,633	589,810	699,541

Age	Nonwhite Population 1960*	1965	1970	1975
0 - 4	9,207	12,469	15,657	20,304
5 - 14	[illegible]	[illegible]	[illegible]	[illegible]
15 - 19	4,305	6,013	8,337	10,664
20 - 44	20,304	22,114	24,680	29,699
45 - 64	11,088	11,549	12,880	15,726
65 and over	3,793	3,854	3,904	4,322
Total	62,184	73,719	89,180	109,010

*1960 population taken from U.S. Bureau of the Census.

Source: Division of Urban Affairs

1966 to be approximately 512,000 people.* This projection "fits" rather closely the estimates made for the present report. It should be pointed out, however, after 1965 the population projections made by personnel in the Division of Urban Affairs are higher than those made by the Bureau of the Census. The Census Bureau's population projection to 1970 is 556,000 people and their estimate for Delaware's population in 1975 is 621,000 people.**

The reason for the discrepancy in the projections is due to differences in the assumptions concerning net migration rates. For example, the Census Bureau assumes the gross migration rates of the 1955-60 period will continue throughout the projection period. For purposes of the present study, the migration rates are expected to be somewhat higher than those employed by the census. In developing assumptions concerning net migration rates for Delaware, an effort was made to take advantage of local intelligence concerning Delaware's economy. For example, both Union Carbide Company and the E. I. du Pont de Nemours Company have acquired rather large land holdings [illegible] for future development. It is assumed that these two companies will make expenditures in these areas by 1975. If these developments do occur during the projection period, the net migration rate into the State is expected to increase for part of the time under study. No economic interruption of comparable magnitude occurred during the 1955 to 1960 time period.

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*U.S. Bureau of the Census, P. 25, Number 347, September 1966.

**U.S. Bureau of the Census, P. 25, Number 359, February 1968.

As was indicated in an earlier discussion, there was a fairly heavy inmigration of young adults into the State during the 1950 decade. These young adults bring with them not only a high productive capacity but also a high reproductive capacity. Therefore, population is expected to increase not only due to inmigration but also due to natural increase.

A national trend which has relevance for Delaware is that during the 1970 decade the children born as a result of the postwar "baby boom" will be in the 20 to 29 year age category. These young people will be forming families and producing children. The extent to which this phenomenon will have relevance to Delaware is difficult to predict, but if the State maintains its present economic viability there is no question but that the impact will be substantial.

When the anticipated future populations are examined by age categories some fairly interesting trends may be discovered. For example the preschool population, those children under five years of age, is expected to increase from approximately 55,000 in 1960 to almost 80,000 by 1970 and then grow [illegible] doubling in the [illegible] 10-year period. [illegible] a similar growth pattern. These people, which in general category follow [illegible] preschool population through junior high school, are expected to increase from approximately 88,000 in 1960 to slightly more than [illegible] and then reach a population of 120,000 by 1970. The population in the 15 to 19 year age category is expected to grow more rapidly than the two younger age groups. It is anticipated that this category will more than double during the projection period. There were almost [illegible] young people

in this age group in 1960 and it is expected to reach more than 63,000 young people by 1975. This is the age group which will be graduating from high school and entering college. A more detailed discussion of the actual college-age population (18 to 21) will be made in a subsequent section. Persons over the age of 20 are not expected to show as large a proportionate increase in population as those under this age category.

When age comparisons are made among the nonwhite sector of the population, it can be seen that the youngest age groupings are growing faster than is true for the total population. For example, all of the age cohorts under the age of 19 are expected to more than double between 1960 and 1975. The preschool population group (0 to 4) is expected to increase from slightly more than 9,000 in 1960 to an excess of 20,000 by 1975. The number of children between the ages of 5 and 14 is expected to increase from almost 13,300 in 1960 to approximately 30,500 by 1975, while those in the 15 to 19 year age category are expected to increase from 4,300 in 1960 to more than 10,600 by 1975. It is interesting to note that the older age categories among the nonwhites are expected to show only moderate increases during the projection period. The number of persons 65 years of age and over are expected to increase from approximately 3,800 in 1960 to about 4,300 in 1975. That group of persons between the ages of 45 to 64 is expected to increase from approximately 12,300 to 13,800 during the same time period.

From these data it can be seen that the number of persons in the younger age groupings are expected to increase more rapidly than older persons. This is particularly true of that segment of the population which is under 20 years of age.

Projected College-age Population in Delaware.

In order to examine more thoroughly the college-age population in the State, projections were developed for each year between the age of 18 and 21. Single year projections were then developed to the year 1975 from the base year 1960. This age group (18 to 21) is the basis from which college and university enrollments will be estimated. To reiterate, the reason for so much concern with the total college-age population is that a very stable relationship has been found to exist between the size of the college-age population and the number of students actually enrolled in institutions of higher education. This is partly due to the fact that inherent in the component method of projection are the factors of migration and mortality. In making the total projections the number of persons who are expected to die during the projection period have been removed and the number of persons expected to migrate into the State during the projection period have been added.

The size of the college-age population is estimated to have increased from 21,644 in 1960 to slightly more than 30,700 in 1966. This age grouping

TABLE 11

ESTIMATES OF COLLEGE-AGE POPULATION, 1960-1975

Year	Age 18	19	20	21	Total
1960*	5,609	5,119	5,276	5,640	21,644
1961	6,701	5,783	5,279	5,441	23,204
1962	6,669	6,784	5,856	5,343	24,652
1963	6,967	6,753	6,873	5,932	26,525
1964	6,655	6,778	6,473	6,689	26,695
1965	8,604	6,641	6,742	6,537	28,524
1966	8,812	8,575	6,619	6,741	30,747
1967	8,846	8,919	8,679	6,700	33,144
1968	8,603	8,862	8,935	8,698	35,098
1969	9,353	8,938	9,207	9,284	36,782
1970	10,227	9,727	9,036	9,310	38,300
1971	10,972	10,260	9,758	9,323	40,313
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] population taken from U.S. Bureau of the [illegible].

Source: Division of Urban Affairs

example, the number of persons 18 years old showed fairly steady, but not dramatic, increases between 1960 and 1964. Within the single year between 1964 and 1965, however, the number in the 18-year old group increased by approximately 2,000 increasing from about 6,600 to approximately 8,600. The babies born in 1947, the peak year of the "baby boom" in Delaware and nationally, reached their 18th birthday during this time. After 1965 the number in the 18-year old group is expected to maintain a steady increase to the year 1975, but no comparably sharp increases are expected during this time period. The same pattern is expected to prevail for each of the other single-year age categories. For example, the number in the 19-year old group is expected to sharply increase in 1966. The 20-year old group is expected to follow the same pattern a year later and by 1968 the number 21 years of age is expected to increase substantially. This growth pattern rather dramatically demonstrates the effect of the heightened birth rate which occurred during the late 1940's and into the 1950's.

If the projections of college-age population have validity, it can easily be seen that there will be a fairly substantial increase in the reservoir from which college and university students of the future may be drawn. When the fact that increased proportions of young people who start high school are now graduating is also considered, and of these, greater proportions are going on to some form of higher education, one can safely say that substantial expansion in higher education facilities will be in order. To ascertain the order of magnitude of this expansion, estimates of actual anticipated college and university enrollments in Delaware need to be made. This constitutes the purpose of the following chapter.

CHAPTER IV

FUTURE COLLEGE AND UNIVERSITY ENROLLMENTS IN DELAWARE

From data presented in previous chapters, it was demonstrated that in recent years Delaware has shown substantial increases in population. Because of the state's strategic location and its economic viability, it is expected that the population will continue to grow. Paralleling this increase in total population is an expected substantial increase in the college-age population. As has been pointed out many times, the high birth rate immediately following World War II will make its impact felt on college enrollments between 1965 and 1975. Equally important is the increase in the percentage of school-age population graduating from high school and the percentage of high school graduates who enter college. These factors combined with past enrollment trends serve as the basis for making college and university enrollment projections in this report.

The enrollment projections made in this study include only full-time undergraduate students. For purposes of this analysis, students enrolled in extension or graduate programs are not counted. The reason for this is that these programs depend largely upon policies which are made at the local institution. The development of extension and/or graduate programs may have little relationship to the size of the college-age population in the state.

A number of factors could easily alter the predicted enrollments; therefore, the reader should be cautioned when interpreting these projections. For example, the present Vietnam conflict or major economic alterations could seriously affect the college-going patterns of Delaware youth. Further, changes in admission policies, whether real or imagined, could also alter the predicted enrollment. Any alteration in the administration of these schools could easily effect the enrollments. For example, a merger of Delaware State College and the University of Delaware could have primary effects. The recent approval by the State legislature for the creation of two publicly supported two-year institutions is expected to have an effect on future enrollments in Delaware. The extent and manner of the impact is virtually impossible to predict at this time because the curriculum to be offered has not been determined. Other higher educational innovations which have recently occurred in the State could also alter the outcome of anticipated enrollments. Recent efforts to make Goldey Beacon an accredited junior college and the establishment of Brandywine Junior College provide additional educational alternatives to the college-age population. Now that the number has been duly earned, the projected enrollments will be more.

Trends of Colleges and Universities Enrollments in Delaware.

Before making the projections, it was considered desirable to examine the past enrollment trends for the major institutions of higher learning in the State. This was done by investigating the growth patterns of the University of Delaware, Delaware State College, and Goldey College between the years 1950 and 1966. From these data one can get an idea of the trend

full-time undergraduates in the State and also ascertain the proportion of the total college students enrolled in each of these institutions.

From the data presented in Table 12 it can be seen that full-time undergraduate enrollments in Delaware increased from slightly more than 2,000 in 1952 to slightly more than 6,900 in 1966. During this 15-year period the number of full-time undergraduates increased by approximately 242 percent. When the enrollment patterns are examined for each of the separate institutions some of the growth patterns are notable. For example, the number of full-time undergraduates at the University of Delaware increased from 1,776 in 1952 to 5,630 in 1966. This growth rate was slightly less than the growth rate for the State as a whole. Delaware State College during the same time period has shown dramatic proportionate increases. In 1952 there were only 119 full-time undergraduates at that institution. By 1960 this number had increased to 343 students and by 1966 there were 773 full-time undergraduates at Delaware State College. Over this 15-year period the college has increased by more than 550 percent. Although Wesley College is a private institution, it too has shown substantial increases in undergraduate enrollments during the past 15 years. For example, its undergraduate enrollment increased from 322 in 1952 to 363 in 1960 and then grew to 682 in 1966.

Although each of these institutions has shown substantial enrollment increases in the last few years, the rates of growth for single years have varied dramatically, Table 13. For example, when examining the state totals it is notable that some years showed relatively slow rates of growth. Between 1952 and 1953 the number of full-time undergraduate students in

TABLE 12

FULL-TIME UNDERGRADUATE ENROLLMENT* FOR DELAWARE INSTITUTIONS OF HIGHER EDUCATION, 1952-53 TO 1966-67

Year	University of Delaware	Delaware State College	Wesley College	Total
1952-1953	1,776	139	122	2,037
1953-1954	1,804	149	124	2,077
1954-1955	1,918	176	167	2,261
1955-1956	2,078	219	187	2,474
1956-1957	2,067	243	208	2,518
1957-1958	2,201	279	220	2,600
1958-1959	2,308	296	248	2,932
1959-1960	2,473	344	261	3,080
1960-1961	2,751	343	343	3,437
1961-1962	3,260	478	388	4,021
1962-1963	3,526	356	601	4,481
1963-1964	3,989	000	000	0,000
1964-1965	4,325	698	905	5,928
1965-1966	4,975	729	531	6,235
1966-1967	5,630	773	682	6,905

*These enrollment figures represent only full-time undergraduates who were registered at the beginning of the fall semester for each academic year.

Source: Enrollment figures were provided by the registrars from each institution.

TABLE 13

ANNUAL PERCENTAGE INCREASE OF FULL-TIME UNDERGRADUATE ENROLLMENTS FOR DELAWARE INSTITUTIONS OF HIGHER EDUCATION, 1952-53 TO 1966-67

Year*	University of Delaware	Delaware State College	Wesley College	Total
1953	1.6	2.5	1.6	3.0
1954	6.3	18.1	34.7	8.8
1955	8.3	18.0	12.0	9.4
1956	- 0.5	16.3	11.2	1.8
1957	1.6	14.8	5.8	3.2
1958	13.7	6.1	12.8	12.8
1959	3.6	16.2	5.2	5.0
1960	11.2	- 0.3	31.4	11.6
1961	14.9	37.9	13.1	17.0
1962	11.6	17.1	3.4	11.4
1963	11.3	19.3	0.5	11.6
1964	10.2	5.4	22.3	10.6
1965	15.0	5.0	5.1	12.9
1966	13.6	5.4	- 9.2	10.7

*Percent change calculated from beginning of previous school year to beginning of school year given.

Delaware institutions increased by only 3 percent, again between 1955 and 1956 the rate of increase was only 1.8 percent, and between 1956 and 1957 the rate was only 3.2 percent. For every year since 1960, however, the rate of increase has exceeded 10 percent. The single year with the highest growth rate was between 1960 and 1961 when the total number of students increased by 17 percent. Another year in which the rate was rather high was between 1964 and 1965 in which the rate of growth was approximately 13 percent.

When comparisons are made among the various institutions in the State, significant differences are also notable. At the University of Delaware for example, the annual rates of growth between 1952 and 1957 were relatively low. As a matter of fact between 1955 and 1956 there was a slight decline in the total number of undergraduate students at the University. Similar to the State as a whole, however, since 1960 the rates of growth have been substantial. The high water mark was reached in 1965 when the rate of increase was 15 percent more than the previous year. In recent years, the year-to-year rates of increase for undergraduate enrollments at the University of Delaware have approximated 12 percent with slight variations above and below this proportion.

Delaware State College has exhibited rather varied growth patterns. At this institution the rate of increase between 1952 and 1953 was only 2.5 percent. For the next four years, however, the annual rates of increase were in excess of 14 percent. The only year in which Delaware State College has shown a decline in full-time undergraduate enrollment was between 1959 and 1960. Immediately following that year, the undergraduate enrollment

at Delaware State College displayed a dramatic 37.9 percent increase over the previous year. For the past three years, 1960-1963, the annual rates of growth have been rather low with rates of increase approximating five percent.

In that Wesley College is the smallest of the three institutions and is also privately endowed, its rates of growth have probably been more erratic than the other two institutions. In general, the growth patterns for Wesley College may be characterized by intermittent years of very high rates of growth with relatively low rates of increase between these years. For example, in 1954 the number of full-time students increased by more than a third over the previous year. Again in 1960 the number of students increased by slightly less than one-third over the number of students who enrolled in 1959. The 1964 student body was more than one-fifth larger than it had been the previous year. The only time in which Wesley College showed a decline in enrollment over the past 15 years was in 1955, when the enrollment declined by slightly more than nine percent. The reason for this decline is that, in the process of additional building, an older dormitory which housed women had to be demolished. Therefore, the lack of space served as the major constraint.

The proportion of full-time undergraduates enrolled in each of the various institutions has shown some fluctuations over the last 15 years, Table 14. For example, in 1952 slightly fewer than 9 out of 10 undergraduates enrolled in a Delaware institution were at the University of Delaware. The remaining proportion was almost evenly divided between Delaware State College and Wesley College. During the next five years,

[illegible]

[illegible] OF [illegible] [illegible] [illegible] [illegible] [illegible]; [illegible]
OF [illegible], [illegible] TO [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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however, this relationship should soon shift. By 1977 the proportion of graduates at the University, in relation to the other institutions, had declined so that about four-fifths of the state's undergraduates were enrolled there. The proportion at Delaware State had increased so that approximately 1 out of 10 students was at that institution and the proportion at Wesley was about 0.5 percent. In general, this relationship among these three institutions has prevailed during the last 10 years.

Projections of Full-time Undergraduate Enrollments in Delaware.

From data presented in the last section it was shown that the decade of the 1960's has already witnessed the most dramatic expansion in the demand for and scope of higher education in recent history. In many respects, however, "the past is prologue", and new efforts must be made to determine future enrollments. The purpose of the present section is to project full-time undergraduate enrollments in Delaware to the year 1975. When interpreting these projections, the reader should be aware of the cautions which were indicated in the introduction to this chapter.

Projections were developed by means of extending current trends into the immediate future. Such projections require that certain assumptions be made. The following assumptions have been used as the basis for these projections:

1. The trend of immigration and outmigration of college-age youth will prevail in accordance with data presented in Chapter III.

2. The basic policies regarding student admission and retention in Delaware institutions of higher education will remain relatively the same as at present.

5. Please edit the new analysis memo, incorporate Commissioner's, new analysis comments and send it back to me for review before the meeting on Tuesday.

6. The presentation of this study includes a discussion of the methodology used to estimate the number of high school graduates who leave the state for college.* This discussion, which is very technical in nature, should be edited. Specifically, it is very important that the study clearly explain how the estimates were derived. Also, we should discuss the possibility of including this information in an appendix.

7. The final report should include a discussion of the relationship between the number of high school graduates and the number of college-age residents. Please include a discussion of this relationship in the report.

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*In a recent report prepared by Gordon B. Miller of the State of Delaware Department of Public Instruction, it was shown that 34 percent of the 1983 high school graduates (other than Wilmington) were attending four-year colleges. Of this proportion, slightly less than one-half (16 percent) was enrolled in out-of-state institutions.

**A more precise statement concerning the methodology is presented in Appendix II.

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TABLE 18

PROJECTED FULL-TIME UNDERGRADUATE ENROLLMENTS IN PUBLIC
UNIVERSITIES OF ALBERTA, 1967-68 TO 1975-76

School Year	Provincial Government Universities	Universities Calgary	Universities Edmonton
1966-67*	6,502	-	-
1967-68	7,000	3,770	7,350
1968-69	8,000	4,036	8,734
1969-70	9,000	4,293	9,413
1970-71	9,896	4,786	10,006
1971-72	10,845	5,273	10,733
1972-73	11,329	5,518	11,430
1973-74	11,779	5,749	12,019
1974-75	12,273	5,983	12,683
1975-76	12,732	6,201	13,319

*Actual enrollments.

**The standard error of estimates for the data used in making these projections was 130. Assuming that the addition of comparable data for the projection period would not change the standard error of estimate, then the average dispersion of observed measures about the predicted enrollments would be given by a standard deviation of about 130. In other words, the chances are about one in three that the actual enrollment for any one year will fall outside the limits indicated. It is probable that the enrollments will be close to the predicted enrollments.

Source: Division of Urban Affairs

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of higher education. This proportion is expected to increase to slightly less than 3 out of 10 by 1975. Again, it needs to be mentioned that this proportion would be substantially increased by the activation of the proposed institutions.

Projected enrollments for each of the Delaware institutions of higher education may be found in Tables IV, IX, and X. The University of Delaware enrollments are expected to increase from 7,650 in 1965 to slightly more than 8,650 by 1970 and then grow to a full-time undergraduate enrollment of 10,500 by 1975. This is approximately a doubling over the next 10 years. Delaware State College enrollments are expected to more than double during the projection period. The enrollment in 1965 was 773 students which is expected to increase to 1,180 by 1970 and then grow to a full-time undergraduate enrollment of approximately 1,650 by 1975. The rate of increase at Delaware State College between 1965 and 1967 is expected to be fairly substantial. The reason for this is that a new dormitory will become functional during that time. Wesley College is expected to show substantial increases in undergraduate enrollments between 1965 and 1975. A student body of 482 full-time students is expected to increase to 677 in 1970 and then to grow to 868 in 1975. The number of students in 1967 at Wesley College is expected to be substantially larger than in 1965. The reason for this is the acquisition of more space during that time. It must be kept in mind when interpreting the projections for Wesley College that this is a private institution and the policies which are set greatly influence the number of students which they enroll. These projections are based upon the assumption that Wesley College will continue to increase in

TABLE 17

[illegible] FULL-TIME UNDERGRADUATE ENROLLMENTS
AT THE UNIVERSITY OF OKLAHOMA,
1967-68 TO 1975-76

School Year	Projected Enrollments	Limits	
		Lower	Upper
1966-67*	5,650	-	-
1967-68	6,041	6,038	6,392
1968-69	6,995	6,904	7,026
1969-70	7,942	7,811	7,973
1970-71	8,834	8,683	8,963
1971-72	9,636	9,435	9,717
1972-73	9,221	9,290	9,232
1973-74	9,911	9,680	9,942
1974-75	10,381	10,134	10,616
1975-76	11,187	11,186	11,228

*Actual enrollments.

Source: Division of Urban Affairs

TABLE 10

PROJECTED FULL-TIME UNDERGRADUATE ENROLLMENTS FOR DELAWARE STATE COLLEGE, 1967-68 TO 1975-76

School Year	Projected Enrollments	Limits	
		Lower	Upper
1966-67*	773	-	-
1967-68	942	901	983
1968-69	1,034	983	1,085
1969-70	1,134	1,073	1,195
1970-71	1,185	1,114	1,256
1971-72	1,260	1,199	1,321
1972-73	1,358	1,317	1,399
1973-74	1,458	1,417	1,499
1974-75	1,557	1,516	1,598
1975-76	1,646	1,605	1,687

*Actual enrollments.

Source: Division of Urban Affairs

TABLE 19

PROJECTED FULL-TIME UNDERGRADUATE ENROLLMENTS FOR WESLEY COLLEGE, 1967-68 TO 1975-76

School Year	Predicted Enrollments	Limits	
		Lower	Upper
1966-67*	482	-	-
1967-68	577	539	615
1968-69	613	577	653
1969-70	648	610	686
1970-71	677	639	715
1971-72	717	679	755
1972-73	749	711	787
1973-74	790	752	828
1974-75	831	793	869
1975-76	868	830	906

*Actual enrollments.

Source: Division of Urban Affairs

proportion to the increase in the college-age population. If the policy-makers for this institution decide to limit the number of students, the predicted enrollments made here would have little validity.

From the data presented in this analysis it can be seen that the rates of growth reached a relatively high plateau during the 1960 decade. It is expected that this relatively high rate will continue at least for the next two years, Table 20. If the projections are reasonably accurate, however, the rates of increase are expected to decline during the decade of the 1970's. The reasons for this are that the base from which the rates are computed have become substantially larger on the one hand, and on the other hand, the first wave of college students who were born during the "baby boom" will have graduated.

In conclusion, the major emphasis of this study has been given to the impact on higher education of the "population explosion" and the rapidly increasing demand for higher education within the State of Delaware. There is, however, an even greater challenge facing those who are responsible for planning for higher education. This is the challenge of the "explosion of knowledge". There may be those who question whether it is possible to obtain and improve the <u>quality</u> of existing programs and curricula at a time when the pressures to expand the <u>quantity</u> are so great. For others, especially those in positions of educational leadership, it is not a question of whether this <u>can</u> be accomplished, but <u>how</u>.

TABLE 20

ANNUAL PERCENTAGE INCREASE OF PROJECTED FULL-TIME UNDERGRADUATE ENROLLMENTS FOR DELAWARE INSTITUTIONS OF HIGHER EDUCATION 1967-68 TO 1975-76

Year	University of Delaware	Delaware State College	Wesley College	Total
1967	12.6	21.9	19.7	14.1
1968	10.0	9.8	6.6	9.7
1969	7.8	7.7	5.4	7.6
1970	6.5	6.4	4.5	6.4
1971	8.1	8.0	5.9	8.0
1972	6.2	6.1	4.5	6.0
1973	7.5	7.4	5.5	7.3
1974	6.8	6.8	5.2	6.7
1975	5.8	5.7	4.4	5.7

Source: Division of Urban Affairs

APPENDIX I

Population Projections and Assumptions.

The analytical method utilized here to estimate future populations of the various subdivisions of the State is the component method or the U.S. Census Bureau's "Method II". It is the most accurate and hence the most complex method available. The component method employed in developing projections of this region follows closely the computational routines used by Tarver in projecting Oklahoma's population.[1] Various alternative procedures of projecting population are available and might have been used.[2] However, mathematical methods and shortcut methods have generally not produced results as satisfactory as a component method.

Population projections for each area and period were computed from the following formula:

$$P_1 = P_0 - D + M + B$$

Where P_1 is the projected population for the future, P_0 is the population at the start of the period, D the total deaths, M net migration, and B, births to residents of the area during the projection period. The population projections for each of the subdivision are presented for five-year intervals from the base year of 1960 to the target date of 1990. The projections are made for five-year age cohorts by sex and color.

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[1]See James D. Tarver, A Component Method of Estimating and Projecting State and Subdivisional Populations. (Stillwater, Oklahoma Agricultural Experiment Station, Miscellaneous Publication MP-54, December 1959).

[2]See Helen R. White, Jacob S. Siegel, and Beatrice M. Rosen, "Short Cuts in Computing Ration Projections of Population," Agricultural Economic Research, V (January 1953) pp. 5-11.

A detailed statement of assumptions which were made in order to project the population is listed below. In developing the assumptions concerning anticipated migration rates, heavy reliance was placed upon the economic base studies prepared by Mr. Robert W. Cook of the Division of Urban Affairs of the University of Delaware for the Delaware State Planning Office.

Assumptions.

All estimates of population for each of the areas presented in this report are based upon the following assumptions:

1. There will be no major change in the projected trends due to wars or economic or social crises (international, national, or local.)
2. There will be no major alteration in the economic structure of any of the counties.
3. The birth rates for each of the population categories will approach the 1960 rate.
4. The death rates will also approach the 1960 rate.
5. Migration:
   a. Wilmington
      i) Net migration rates for the nonwhite population will remain at the average 1950-1960 levels during the next decade and then will decrease to three-fourths of the level for the 1970 decade.
      ii) Net migration rates for the white population will approximate three-fourths of the average 1950-1960 rate during the years 1960-1964. From 1965 to 1969, the net migration rate will decrease to approximately one-half the

1950-1960 rate and during the decade from 1970 to 1980 the migration loss will level off at approximately one-fourth the 1950-1960 rate. Available data and other estimates of migration indicate that, although outmigration was heavy in the 1950's generally, the greatest movement took place in the later years of the decade in response to urban renewal activities and highway construction. The impact of these activities will be felt into the 1960's but should diminish into the 1970's.

b. Balance of New Castle County

i) Net migration rates for the nonwhite population will approximate 120 percent of the average 1950-1960 levels. Recent activity among the Negroes indicates greater movement into the county during the next two decades.

ii) For the white population the rate of migration into the balance of the county from 1960 to 1964 will approximate 60 percent of the 1950-1960 rate. This rate will increase to about four-fifths of the 1950-1960 rate for the years 1965-1969. From 1970-1979 the rate of migration into the county will level off to approximately one-half the 1950-1960 rate. Examination of data for the 1950 decade indicates that much of the growth in the county occurred during the first five years of the decade. As a result of the economic recession of 1956 the growth rate

diminished for several years. Available data from the industrial survey and also from the economic base study indicate an increased activity and thus, a continued growth in the balance of New Castle County.

c. Kent County

i) Net migration rates for the nonwhite population will approximate one-fourth the average 1950-1960 levels during the next two decades.

ii) The net migration rates for the white population from 0-44 years of age will approximate one-third of the average 1950-1960 rate for the next 20 years. For the population 45 years of age and over the migration rate will be about one-half the 1950-1960 rate during the next two decades. It is felt that the sudden heavy inmigration of people (especially those in the younger years) due to the reactivation of the Dover Air Force Base will not be repeated in the next two decades. Data from the industrial survey and the economic studies do indicate, however, that enough industrial development will occur in the county to sustain a substantial growth rate at least for the near future.

d. Sussex County

i) Net migration rates for the nonwhite population will approximate the average 1950-1960 levels during the next two decades.

ii) Net migration rates for the younger age white population will be about one-fifth higher than the average 1950-1960 levels during the next two decades. There will only be a 10 percent increase in the net migration rate for the older age category. It was felt that although Sussex County experienced limited economic growth in the past decade, conditions are now such that industry will be actively sought and some obtained. This will serve to attract new young adults to the area and reduce the rate of outmigration among the present young adult residents. During the 1950-1960 decade the county experienced heavy inmigration of older people. It was felt that as recreational sites are developed older people will continue to migrate into Sussex County, in order to retire, and at slightly increased rates.

TABLE I

NUMBER OF LIVE BIRTHS IN THE STATE OF DELAWARE
BY YEAR AND COLOR, 1940-1964

Year	Color		Total
	White	Nonwhite	
1940	3,802	749	4,551
1941	4,252	835	5,087
1942	4,761	896	5,657
1943	5,307	922	6,229
1944	5,102	891	5,993
1945	5,067	917	5,984
1946	5,811	991	6,802
1947	6,604	1,113	7,717
1948	6,087	1,167	7,254
1949	6,103	1,266	7,369
1950	6,258	1,385	7,643
1951	6,864	1,380	8,244
1952	7,258	1,548	8,806
1953	7,532	1,586	9,118
1954	7,958	1,736	9,694
1955	8,820	1,767	10,587
1956	9,308	1,908	11,216
1957	9,650	2,006	11,656
1958	9,458	2,116	11,574
1959	9,572	2,186	11,758
1960	9,446	2,134	11,580
1961	9,474	2,380	11,854
1962	9,120	2,250	11,370
1963	9,178	2,332	11,510
1964	9,084	2,360	11,444

Source: U. S. Department of Health, Education and Welfare, "Vital Statistics of the United States."

TABLE 2
PUBLIC SCHOOL ENROLLMENT FOR THE STATE OF DELAWARE BY GRADE AND YEAR
1951-1965

Year	Grade 1	2	3	4	5	6	7	8	9	10	11	12	Total
1951	5,181	5,144	5,035	4,792	4,353	4,073	3,975	3,596	3,554	2,943	2,526	2,186	47,358
1952	6,182	5,088	5,109	5,012	4,893	4,344	4,179	3,698	3,698	3,248	2,487	2,345	50,287
1953	7,086	5,930	5,130	5,068	5,095	4,860	4,644	4,061	3,725	3,368	2,838	2,235	54,041
1954*	(1 thru 6		35,372			)	(7 thru 12		22,549			)	57,921
1955	7,345	6,769	6,920	6,003	5,186	5,244	5,360	4,926	4,407	3,671	2,977	2,716	61,524
1956	7,355	7,130	6,888	6,868	5,991	5,224	5,719	5,149	4,900	4,057	3,307	2,732	65,320
1957	7,742	7,150	7,091	6,668	6,881	6,038	5,575	5,396	5,172	4,568	3,454	2,940	68,675
1958	8,210	7,443	7,173	6,959	6,685	6,797	6,355	5,319	5,431	4,853	4,077	3,201	72,503
1959	8,702	7,906	7,418	7,123	6,929	6,650	7,196	6,265	5,421	5,047	4,371	3,651	76,917
1960	8,981	8,316	7,906	7,437	7,152	6,978	7,030	7,036	6,520	5,114	4,513	3,995	80,978
1961	9,503	8,588	8,352	7,860	7,430	7,096	7,427	6,911	7,413	6,176	4,589	4,137	85,902
1962	9,968	8,892	8,567	8,180	7,805	7,449	7,536	7,210	7,515	7,101	5,405	4,228	89,856
1963	10,768	9,551	8,928	8,580	8,309	7,834	7,968	7,359	7,612	6,982	6,459	5,247	95,597
1964	11,217	10,330	9,590	8,895	8,578	8,214	8,341	7,780	7,853	7,330	6,615	6,108	100,851
1965	11,395	10,270	9,947	9,550	8,914	8,717	8,816	8,237	8,245	7,549	6,744	6,109	104,493

*Unable to locate enrollments by individual grades for 1954.

Source: September enrollments reported by Delaware State Department of Public Instruction.

TABLE 3

RELATIONSHIP BETWEEN NUMBER OF HIGH SCHOOL GRADUATES IN DELAWARE AND 17-YEAR OLDS 1960-1966

Year	High School Graduates	Estimated Number of 17-Year Olds	Percent
1960	3,490	6,498	53.7
1961	3,883	6,587	58.9
1962	4,026	6,876	58.6
1963	4,081	6,839	59.7
1964	4,938	8,620	57.3
1965	5,987	8,840	67.7
1966	6,023	8,740	68.9

APPENDIX II

Method for Making Projections.

A relatively stable relationship was found to exist between college and university enrollments and the size of the college-age population. The derivation of such numerical relationships is known as regression analysis, and the measurement of the degree of relationship between the variables under consideration is commonly known as correlation analysis.

Often the purpose of a correlation analysis is to ascertain the degree of relationship irrespective of its exact numerical nature. For example, there are many variables that could be associated with college and university enrollments. Imagination and sound judgment are the most important requisites for selection of the proper variable for use in the forecast of enrollment. Possible variables to correlate with college and university enrollments include: number of high school seniors, high school enrollment, and estimates of the college-age population.

The variable used to forecast college and university enrollments should lead the actual university enrollments. This lead-lag relationship is very much to be desired because it assures the forecaster that the data for the independent variable will be available prior to calculation of the forecast. The variable chosen to use with the college and university enrollment in this study was the number of persons in the age category 18 to 21 for each year during the forecast period. These data may be found in Table 11. This obviously necessitated making a forecast of the college-age population prior to the calculation in predicting the future university and college enrollments.

The college-age population was forecast in such a manner as to take into consideration the net migration rates of the relevant age cohorts. This was discussed in detail in Chapter III of the report.

The time period used to establish the relationship between college-age population and college and university enrollments included the years from 1960 through 1966.

The standard error of estimate for the total full-time undergraduate enrollment projections in Delaware was 110. This means that the average dispersion of observed measures about the predicted enrollments would be given by a standard deviation of about 110. In other words, the chances are about one in three that the actual enrollment for any one year will fall outside the limits indicated. The standard of estimate for University of Delaware enrollments was only 31. The relative smallness of this estimate is due to the fact that the university enrollments have maintained a very strong relationship to the size of the college-age population in the State. The standard errors of estimate for Delaware State College and Wesley College were 42 and 38 respectively.

The least squares method was utilized and the regression equation for predicting college and university enrollments from college-age population was $Y = a + bX$, where Y is the dependent variable (college and university enrollments) and X is the independent variable (number of persons in the 18 to 21 year age category).

BIBLIOGRAPHY

Anderson, Kenneth. Forecasting University of Kansas Enrollments 1965-66 to 1974-75 and to the year 2000. The University of Kansas. December 1964.

Brown, C. Harold, and O'Connor, J. Kevin. Population in Delaware. Division of Urban Affairs, University of Delaware. January 1965.

Enrollment in New York State Institutions of Higher Education, 1960-1978. The University of The State of New York, State Education Department. January 1965.

Kentucky Higher Education Enrollments and Projections 1960-1970. Prepared by John E. Cleek. Kentucky Council on Public Higher Education. Frankfort. February 1965.

Mushkin, Selma J., and McLoone, Eugene P. Public Spending for Higher Education, 1970. The Council of State Governments in Cooperation with The George Washington University. February 1965.

O'Connor, J. Kevin, and Brown, C. Harold. Population, Household, and Labor Force Projections for the Wilmington Metropolitan Region. Division of Urban Affairs, University of Delaware. March 1966.

Potential Enrollment for Indiana Colleges and Universities, 1955 to 1972. Prepared by N. M. Parkhurst and Betty Suddarth. 1955.

Thompson, Ronald B. Enrollment Projections for Higher Education 1961-1978. The American Association of Collegiate Registrars and Admissions Officers. September 1961.